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(54) Title: TWO-PHASE COMPOSITION HAVING A VISIBLE PATTERN

(57) Abstract: A dual phase product is comprised of at least a first phase colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form a visually attractive pattern within said at least a second phase, and such pattern may be viewed through a container housing the novel composition of the invention and its enhanced spiral means. A method and apparatus are provided that allows two or more compositions to be filled with a spiral configuration into a single container. Each product may have completely different chemical and physical properties, and each product may have a different function and purpose. The method includes providing at least two compounds, arranged in separate storage bins each having a pump and a hose attached thereto and pumping the at least two compounds through the respective hoses into a nozzle assembly while at least one of the nozzle and container rotates with respect to the other; and resulting product housed in a single container, wherein the resulting product has the at least two compounds formed in a spiral configuration.

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## TWO-PHASE COMPOSITION HAVING A VISIBLE PATTERN

Background of the InventionCross-reference to Related Applications

United States Patent No. D429,146, filed 04/20/99, is expressly incorporated  
5 herein by reference, the application covering the ornamental appearance of subject spiral  
compositions invented by the present inventors and subject to an assignment to the present  
assignee.

Area of the Art

The present invention relates to the formation of multi-product fills. In particular,  
10 the present invention relates to novel compositions and novel ways to fill containers with  
separate types of cosmetics, whereby an enhanced and durable spiral configuration of  
multi-phase (heterogeneous) products may be made, in addition to other novel product  
configurations.

Description of the Prior Art

15 A survey of existing products on the market reveals the multiple efforts that have  
been made to create visually appealing product configurations, and the containers that  
house them, which serve to preserve a desired visual appeal. Likewise, in addition to  
mechanical attempts to solve these problems, chemical solutions have also been  
attempted; however, the lack of commercial success in this field points to an on-going and  
20 longstanding need.

Conventional attempts at making a two-or-more phase product in one dispensing  
container have proven very difficult and sometimes impossible due to chemical reactions  
or product instability (i.e., reacting with each other). What has not been adequately  
accomplished, or developed to date, is a system based on the chemicals themselves and the  
25 system chemistry and incompatibility - for example, putting water and oil together.  
Likewise, after reviewing thousands of products, only a few personal care cosmetics with  
two-or-more phases in one dispensing container were uncovered.

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To understand why known systems have not been able to address the aforementioned problems effectively, further background is offered for consideration to explain the nature of the problem, and why it has been solved by the instant teachings.

5       Cosmetic materials generally contain various types of coloring materials, such as pigments and dyes. Such coloring materials may contain materials derived from raw materials as masking agents for covering coloring. In some cases, these masking agents are included the purpose of providing a particular effect in relation to skin makeup. such effect is a positive function of these coloring materials.

10       Because consumers have increasingly demonstrated a diverse sense of appreciation in regard to the value of cosmetic materials, such cosmetic materials of this kind are now required to possess additional merits related to their intrinsic appeal as objects of beauty. This appreciation is in complement with providing pleasure in use, as well as the basic functions of being suitable for make-up, and so forth. In other words, today's cosmetics must look and work well to satisfy the needs of the consumers.

15       Historically, the preparation of colored products containing two or more colors has been challenging. Even in cosmetics such as basic lipsticks, to produce a two-tone or multi-colored effect on the lips required innovation. In such instances, to achieve the desired blending effect, one color is usually applied to the lips as a base and the other color or colors superimposed thereon for contrast. The desired final effect is then  
20       achieved by blending the superimposed colors while on the lips.

      Likewise, attempts have been made to produce a unitary lipstick having a plurality of colors by assembling several individual segments in an adjacent spaced relationship, and thereafter compressing the segments together to form a unitary lipstick mass. Such lipsticks, however, have met with limited commercial success. One reason may be that  
25       these lipsticks have been more difficult and expensive to produce than conventional one-color lipsticks. In practice, of course, lipsticks that are formed by molding segments of different colors into a single multi-colored tube are usually applied to the lips by using the single color of each segment such that these lipsticks merely offer the convenience of two separate colors in one unitary mass.

Known disclosures thus highlight that the concept of a dual-phase or multiphase cosmetic composition being quite interesting inasmuch as such a composition has a potential for combining two or more functional cosmetic aspects into a single product that may be applied to a subject. However, with any such multifunctional, multiphase  
5 cosmetic composition, it is obviously important that the formed product be functional and effective and that such be maintained, preserved, and usable over a reasonable product life span. This difficulty has not been overcome by known disclosures.

Another largely unaddressed issue is containing and packaging a multiphase cosmetic composition. Here, it is desirable that each of the phases comprising the total  
10 product be dispensed into a container such that the respective phases are generally maintained separately, remain stable, and that in viewing the product each phase, as packaged, is visually distinct. Of principal concern is that, during the proposed life of a multi-phase cosmetic product, respective phases comprising the total product do not blend and mix together such that the total product in the end is nearly or substantially  
15 homogeneous. In addition, in containing a multifunctional, multi-phase cosmetic composition, it is important that the respective phases comprising the composition be dispensed in a manner such that the particular phases are present and occur throughout the final product. It is also important that in gathering a single application from a container, a subject is likely to gather an adequate amount of each respective phase.

20 At the root of these several matters is the idea that cosmetic products rely on color to provide beauty enhancement. Thus, beauty aids such as foundation, blush, mascara, brow products, and the like, rely on color enhancement provided by these products for effectiveness. In view of the criticality of color in such applications, it is desirable to present the cosmetic product, which is ultimately applied to the face or other parts of the  
25 body to highlight that color, in a way that emphasizes its color. In the past such cosmetic products, if visible at all, were presented as a colored composition. Those skilled in the cosmetic arts appreciate that if the color of the cosmetic composition could be presented in a more dramatic manner, the product would be more desirable to the purchaser. For example, presenting the color in the form of a spiral, helix, swirled pattern, or the like,  
30 against a background of a clear or color-contrasted liquid, dramatically emphasizes the attractiveness of the color of the cosmetic beauty aid.

It would be relatively simple to produce an oil-based pigment phase in a clear aqueous phase, or vice versa. The immiscibility of the two phases would permit the production of a cosmetic product in which the above desired, highly attractive packaging could be provided. However, the inclusion of an oil-based phase would be undesirable for  
5 at least two reasons. First, it would be difficult to combine the immiscible phases to form the complete cosmetic composition. Second, even if the two immiscible phases could somehow be combined the product containing a non-water-soluble phase might be difficult to remove.

Ideally, a two-phase composition should include a color phase and clear or color-  
10 contrasted gel phase that are miscible. However, when attempts were made to produce such a product in the past, a two-phase composition was obtained in which the color phase bled into the gel phase, producing a product that was aesthetically unattractive.

Thus, cosmetic products have not been produced in which a color phase, highlighting the tint or color of the cosmetic composition, is disposed as a discrete color  
15 phase against a background of a clear or color-contrasted gel.

To compound the problem, conventional cosmetic vehicles for skin moisturization deliver moisture to the skin only on the initial application of the cosmetic moisturizer. The need for a cosmetic, dermatologic or medicinal multiphasic vehicle that will, in addition, provide sustained skin moisturization while blocking skin moisture loss has been  
20 long felt. There has also been a need for a multiphase vehicle that can be used to provide water-soluble and lipid-soluble active ingredients, such as vitamins, plant extracts, antioxidants, proteins, polymers, oils and the like. Most cosmetic vehicles consist of emulsions.

An emulsion is known to be a dispersed system comprising at least two immiscible  
25 liquid phases (*Remington's Pharmaceutical Sciences*, 18th Edition, 1990). The emulsion's immiscible liquid phase is composed of droplets between 0.005 to 2000 microns in diameter, although the range of droplet diameters may be narrower (e.g., between 0.1 to 100 microns). Emulsions are known to be thermodynamically unstable. It is believed that the free energy associated with the high surface area of small droplets is

reduced when these droplets coalesce into large droplets of less surface area. To minimize droplet coalescence, it is known that an emulsifying agent can be added to form a thin film about each droplet of immiscible liquid in the emulsion (*Remington's Pharmaceutical Sciences*, 18th Edition, 298-309, 1990).

5 Perfluoropolyethers (PFPE) such as perfluoropolymethylisopropyl ether (Montefluos trade name Fomblin HC) are useful as non-greasy lubricants. These compounds are odorless, colorless, tasteless, nonvolatile, nontoxic, and chemically stable below 300° C. Consequently, PFPEs with a molecular weight between 250 to about 30,000 have been used in a wide variety of cosmetic formulations for make-up, hair,  
10 toiletry, skin and baby products (Brunetta F., et al., *Cosmet. Toilet, Ital.* Edition 2, March/April 1986; Brunetta F., et al.; *XIV Congreso I.F.S.C.C.* Barcelona, Spain Volume 1:513, Sep. 16-19, 1986).

PFPEs are known additives to multiphase emulsions due to their tendency to form thin films. "Perfluoropolyethers For Cosmetics", *D&CI*, September 1988, 34-35, 116,  
15 119, disclose the use of perfluoropolyethers (in particular, Fomblin) in cosmetics in which the insolubility of Fomblin is asserted not to affect the preparation of stable emulsions. It is further disclosed that the use of 0.1-3% Fomblin HC in oil-in-water emulsions produces finer dispersions and that 0.2-1.0% of Fomblin HC/25 increases the moisturizing properties of creams. Finally, the article states that all grades of Fomblin HC form a "thin and non-  
20 occlusive film, providing a satin finish and skin feel" (Ibid. at p. 119; see, also, Bader S, et al., Montefluos SpA Company bulletin). U.S. Pat. No. 4,803,067 discloses the utility of perfluoropolyethers not only as waterproofing agents but also as a barrier against loss of moisture from the skin without adversely affecting skin respiration.

It is also known that emulsions of PFPE can be used to protect human and animal  
25 skin against toxic agents such as mineral acids, caustic alkali, and organic solvents such as toluene and kerosene (Morganti P & Randazzo, *J. Appl. Cosmetol.* S.D. 7:23-30, 1989).

Stable emulsions containing silicones of two or three phases are well-known. The low surface tension of silicone promotes thin film formation that stabilizes emulsions. Lower alkyl (C<sub>1</sub>-C<sub>4</sub>) and amino-substituted polysiloxanes (silicones) are used because of  
30 their insolubility in polar and non-polar liquids such as water and oils. Seldom used are

the cyclic silicones, such as diphenylmethicone, because of their oil solubility, which causes the cyclic silicones to dissolve in the oil phase of the emulsion rather than forming a distinct phase.

Silicone emulsions have been used in a number of products. In cosmetic,  
5 pharmaceutical and skin preparations, a fat paste-like emulsion of  
decamethylpentasiloxane, poly(oxyethylene stearate), water and sorbitan monostearate has  
been used (Thimineur R.J. & Traver F.J., DE 3,045,083). In personal-care formulations,  
such as water-based hair conditioners, a water in silicone emulsion has been used (Gum,  
M.L., W08S/03641/AI). In formulations for polishes, an emulsion of dimethylsiloxanes,  
10 naphtha hydrocarbons, emulsifiers and water has been used (Hill M.P.L. & Vandamme L.J.  
R., DE 3,616,575 A1). Water-thinned paint emulsions have used silicones (Udalova A. V.,  
et al., *Lakokas Mater, Ikh. Primen.*, 2:14-16). Waterproof sealant emulsions have used  
silicones (Saad W. T. & Stodgell R. F., U.S. Pat. No. 4,383,062; Bauman T. M., Freiberg  
A.L., U.S. Pat. No. 4,590,220).

15 The ordered phase of liquid crystal has many of the properties of the solid state  
such as optical anisotropy and birefringence, which produce special interference patterns  
that can be detected using a cross-polarizing microscope. Liquid crystals also have the  
mechanical properties of liquids. Because the crystals have only partial rotational or  
translational freedom, the liquid crystals exist in a mesophase state (*Intro to Liquid*  
20 *Crystals*, Priestly E. B., et al., editors, Plenum Press, N.Y. 1976).

Liquid crystals known as lyotropic liquid crystals may spontaneously form when  
the concentration of oils in an oil-water emulsion is at a particular concentration. (See,  
e.g., Marland J.S. & Mulley B.A., *J. Pharm. Pharmacol.* 1971, 23(8): 561-572).  
Lyotropic liquid crystal formation is commonly observed in a wide variety of emulsions  
25 and such liquid crystals are known to be unstable.

The only significant attempt among the prior art to address the problem solved by  
the teachings of the present invention was a hair gel where a white product was filled  
inside of a clear gel. The product was filled using a two-step process. First, the clear gel

was filled with an Arenco tube, and then in a modified registration station, the spiral was filled with a diving nozzle and a peristaltic pump.

Formation of the spiral required spinning the tube of clear gel and then submerging the nozzle to the bottom of the tube. While the nozzle was then lifted up, the peristaltic pump started and operated until the nozzles came close to the top of the clear product. The next step was stopping and reversing to stop the flow of the white product.

Known spiral fills (for example sold by Estee Lauder, Lapraire, Erno Lazlo and Revlon), or more elaborate designs in clear gel, are priced at between \$50.00 and \$100.00, and require two-step processes, both of which urge strongly against their industrial efficacy. Their respective shelf lives are also dubious.

Likewise, toothpaste-tube-filling technology works by simultaneously filling tubes in straight lines that show through transparent windows in the sides of the tubes. While such efforts are dictated by ornamental constraints, no known methods can perform the process in fewer than two steps.

Finally, there are liquid crystals that are known to form at only certain temperatures known as thermotropic liquid crystals. This type of liquid crystal is quite stable, but has not been used to solve the problems addressed.

Accordingly, each phase must maintain certain chemical and physical properties, which makes each phase stable and gives them the ability to co-exist with the other. The physical properties are very important in terms of dispensing. Maintaining a certain viscosity and specific gravity (density) allows us to have a more stable and functional product. The viscosity is one of the most important physical properties. Each product must maintain a certain viscosity. The viscosity for each product must be close to the other. The viscosity difference between each phase must be maintained within a certain range, which is relative to the rheology of the product. Thus, it is extremely critical that each product have similar rheology, i.e., thixotropic with thixotropic. Maintaining similar rheology will enable us to dispense the product evenly when energy is applied. Furthermore, it will enhance the product shelf life by preventing the multiple phase product from mixing with each other.



The chemical properties are as important, if not more so, than the physical properties. Having different chemical properties, using different chemicals, or even using the same charged product (i.e., cationic with cationic) will allow us to have a more stable product. Attempts have been made to use different emulsion systems with different aqueous and anhydrous gel systems.

Likewise prior art attempts have incorporated the carbomer, polymer, crosspolymer, silicone, humectant, elastomer dispersion, lubragel polytrap and different emulsion (i.e., hydrophilic, hydrophobic) chemistry in delivery systems, where filling of product played a major role in the outcome of the finished product. The different designs or the fill ratio of each phase was hoped to address different needs and applications; for example, dry skin, oily skin, and the like.

In cosmetic emulsions that are applied to the skin, water and active ingredients ("actives") such as vitamins, oils, antioxidants and the like are released from their respective phases in the emulsion by diffusion. A product for external use having multiple discontinuous phases can serve a number of important functions. Each phase can function as an independent delivery system for moisturizers, emollients, bioactive materials, and the like.

The release of material from the dispersed phase, and its subsequent absorption into the stratum corneum, are critically dependent on the interaction between the material, its solvent, and its immediate interface (Zatz J.L., Cueman G.H., *J. Soc. Cosmet. Chem.* 39:211-222, 1988). The complexity of these interactions usually increases with the number of phases. This makes multiple emulsions excellent candidates for tailored-release systems, as exemplified by their use in the administration of vaccines, drugs, and anticancer agents (Becher P., *Encyclopedia of Emulsion Technology*, pp. 199-202, Marcel Dekker, N.Y. 1985).

Phase inversion occurs when an oil/water emulsion changes (inverts) to a water/oil emulsion. Inversion can be induced by adding electrolyte, changing the ratio of the phase volumes, cooling a heated emulsion, adjusting the amount of emulsifier, or when the dispersed phase exceeds 50% of the total volume of the emulsion (Remington's *Pharmaceutical Sciences*, pp. 307-308, 1990).

By way of further background, attention is called to the following United States Letters Patent references each of which has been found to be distinguishable from the teachings of the present invention, yet representative of at least one aspect of the state of the art:

- 5                    5,304,334 issued Apr. 19, 1994 to Lahanas et al., and assigned to Estee Lauder, Inc., for a Method of Preparing a Multiphase Composition;
- 5,059,414 issued Oct. 22, 1991 to Dallal et al. and assigned to Shiseido Co. Ltd., for Multi-Phase High Viscosity Cosmetic Products;
- 4,980,155 issued Dec. 25, 1990 to Shah et al. for a Two Phase Cosmetic  
10                   Composition;
- 4,966,205 issued Oct. 30, 1990 to Tanaka and assigned to Pola Chemical Industries for a Method and Apparatus for Charging Transparent Material;
- 4,425,322 issued Jan. 10, 1984 to Harvey et al. for Dual Action Dentrifirce;
- 4,335,103 issued Jun. 15, 1982 to Barker et al., and assigned to Almay, Inc.  
15                   for a Multiphase Cosmetic Composition and your attention is directed to Column 6, lines 46 - 66;
- 4,159,028 issued Jun. 26, 1979 to Barker et al., and assigned to Almay, Inc., for a Method of Forming and Containerizing a Multiphase Cosmetic Composition;
- 20                   3,980,767 issued Sept. 14, 1976 to Chown et al., and assigned to Beechum Group Limited, for Gel Toothpastes; and
- 3,479,429 issued Nov. 18, 1969 to F.S. Morshauser et al. for a Multi-Colored Cosmetic Preparation.

25                   U.S. Patent No. 4,335,103 to Barker et al. (the "103 patent") discloses a two-phase cosmetic cleansing cream composition that includes two separate and stable cosmetic composition phases which, when inter-mixed, yield a cleansing composition that

is applicable to the face and other parts of the body. This composition comprises a first cleansing cream phase composition which includes an oil, a thickening agent, an emulsifier and water. The second phase, a gel phase, comprises water or a water-soluble material and a thickening agent. The two-phase cosmetic cleansing cream compositions are combined in a swirl-like or marble-like pattern within a container such that the cream hard gel phases are generally stable, separate and visibly distinct.

Although the teachings of the '103 patent represents an advance in the art, it does not emphasize a color phase. Colorants easily migrate. As such, the absence of a teaching in the prior art of non-bleeding phases establish the absence in the art of a two-phase cosmetic composition in which the color-phase composition highlights the critical emphasis of the composition.

Likewise, conventional cosmetic vehicles for skin moisturization deliver moisture to the skin only on the initial application of the cosmetic moisturizer. The need for a cosmetic, dermatologic or medicinal multi-phasic vehicle that will, in addition, provide sustained skin moisturization while blocking skin moisture loss has been long felt. There has also been a need for a multi-phase vehicle that can be used to provide water-soluble and lipid-soluble active ingredients, such as vitamins, plant extracts, antioxidants, proteins, polymers, oils and the like. Most cosmetic vehicles consist of emulsions. In sum, there are needs for two or more types of cosmetic products housed within the same container.

In contrast to known systems, the teachings of the present invention address and overcome these long felt needs by providing, instead of two or more different products, one product (or a unitary composition housed in a single container) with multiple functions and different appearances.

The present inventors have yet to see something functional like this on the market. There are some products with somewhat similar concepts, but not functionally implemented. Attempts ranging from products with floating materials that have no purpose to spirals that degrade when moved, or merely constitute ornamental fillers, show the need for the present invention. Accordingly, the instant system combines chemical functionality and a visually appealing product to overcome the drawbacks of the prior art.

Clearly, there is a longstanding need for a new composition that can be used with a delivery system for cosmetics such that a dual spiral product or dual phase product housed in one container, maintaining desired ornamental appeal while preserving for dispensation desired product attributes and utilities.

5    Summary of the Invention

Accordingly, it is a prime object of the present invention to provide a product that overcomes the drawbacks of the prior art.

Accordingly, it is a prime object of the present invention to provide a process and apparatus that overcome the drawbacks of the prior art.

10       Additionally an important object of the present invention is to provide a gel system (aqueous) based on carbomer, lubragel, polymer, and different humectant chemistry to give different textures and, equally as importantly, product stability, using conventional coloring agents to create a visually attractive appearance.

15       Additionally, it is an object of the present invention to provide a process and apparatus for generating a dual-phase or multi-phase product whereby each phase maintains certain chemical and physical properties that makes each phase stable and gives each phase the ability to co-exist with the other.

20       Another object of the present invention is to provide a solution to the problem of having multiple functions in a single product by creating a stable and extremely functional product.

25       Yet another object of the present invention is the provision of a system which yields a great functionality level in combination with a visually appealing product, by employing known coloring means in combination with a novel chemical composition effective for creating visually perceptible spirals, helices, and the like features effective for use as disposed within an at least partially transparent container.

Likewise, an object according to the present invention is the provision of a novel spiral composition which is a stable and extremely functional product for different

cosmetic based applications, including as a therapeutic skin composition for those whose skin is in need of such therapy or sensitive to the same.

Briefly stated, a dual phase product is comprised of at least a first phase colored with an effective amount of a coloring agent to contrast with at least a second phase, in a ratio of from about 10:1 to about 1:10, whereby said at least a first phase is disposed to form a visually attractive pattern within said at least a second phase, and such pattern may be viewed through a container housing the novel composition of the present invention and its enhanced spiral means.

The foregoing and other objects of the invention are achieved by a composition contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases which may include at least one water continuous phase and at least one oil continuous phase selected to maintain a visually perceptible pattern, which may include a spiral or an abstract, over a period of time. Such period of time may be, for example, 3-6 months. At least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form said pattern within said at least a second phase, in a ratio of from about 10:1 to about 1:10, and preferably from about 3:2 to about 2:3, whereby said pattern is observable through said container.

The coloring agents may include colored mica, chlorophyll, carrot oil, and metallic based, i.e., copper, zinc, chromium, manganese, and iron, colorants as are well known in the art.

The composition according to one embodiment of the present invention can include therapeutic skin compositions containing an effective amount of at least one dermatologically active ingredient for treating the skin of an individual whose skin is in need of such therapy. Alternatively, moisturizing and conditioning skin compositions containing an effective amount of at least one moisturizing and conditioning ingredient for treating the skin of an individual whose skin is in need of moisturizing and conditioning represent another embodiment. Still another aspect of the invention is shampoo compositions for application to the hair and scalp of an individual in need of such application. The shampoo compositions may be therapeutic shampoo compositions

containing an effective amount of at least one therapeutically active ingredient for treating the scalp of an individual whose scalp is in need of such therapy. Further aspects are conditioning shampoo compositions containing an effective amount of at least one conditioning ingredient for conditioning the hair of an individual whose hair is in need of conditioning. Still further aspects are coloring shampoo compositions containing an effective amount of at least one coloring ingredient for coloring the hair of an individual whose hair is in need of coloring.

The therapeutic skin compositions may include vitamins, antioxidants, hormones, anesthetics, antimicrobials, antipsoriatic agents, anti-acne agents, scabicides, pediculocides, keratolytics, sunscreens, agents to increase pigmentation, agents to decrease pigmentation, and skin protectants. The moisturizing and conditioning skin compositions may include vitamins, antioxidants, pH modifying agents, moisturizing agents, astringents, skin lubricants, humectants, and emollients. The therapeutic shampoo compositions may include vitamins, antioxidants, hormones, antimicrobials, antipsoriatic agents, scabicides, pediculocides, and keratolytics. The conditioning shampoo compositions may include vitamins, antioxidants, pH modifying agents, moisturizing agents, lubricants, humectants, and emollients. The coloring shampoo compositions may include at least one coloring ingredient selected from the group consisting of synthetic hair dyes, plant derived hair dyes, hydrogen peroxide solution, and pH modifying agents.

Another aspect of the invention is a method for treating skin comprising the application of a skin composition containing an effective amount of at least one ingredient selected from the group consisting of vitamins, antioxidants, hormones, pH modifying agents, moisturizing agents, astringents, anesthetics, antimicrobials, antipsoriatic agents, anti-acne agents, anti-dandruff agents, scabicides, skin lubricants, pediculocides, keratolytics, sunscreens, agents to increase pigmentation, agents to decrease pigmentation, skin protectants, and emollients for treating the skin of an individual whose skin is in need of treatment, wherein said composition is contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is

disposed to form a visually perceptible pattern within said at least a second phase, whereby said pattern is observable through said container.

Still another aspect of the invention is a method for treating skin dryness, comprising the application of an effective amount of a composition of the invention wherein at least one therapeutically active ingredient is selected from the group consisting of moisturizing agents and skin lubricants, to the skin of an individual whose skin is dry. Yet still another embodiment is a method for treating scalp ailments, comprising the application of an effective amount of a composition of the invention, wherein one therapeutically active ingredient is selected from the group consisting of antipsoriatic agents, scabicides, pediculocides, and keratolytics, to the scalp of an individual with a scalp ailment. Yet still another embodiment of the invention is a method for conditioning the hair, comprising the application of an effective amount of a composition of the invention for washing the hair of an individual whose hair requires conditioning. Likewise, a method for coloring the hair, comprising the application of an effective amount of a composition of the invention for washing the hair of an individual whose hair requires coloring.

An article of manufacture, comprising packaging material and a composition of the invention contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases selected to maintain a visually perceptible pattern over a period of time, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form said pattern within said at least a second phase, in a ratio of from about 10:1 to about 1:10, and preferably from about 3:2 to about 2:3, whereby said pattern is observable through said container is also taught.

According to another feature of the invention there is provided an article of manufacture comprising; at least partially transparent packaging housing at least two separate dispersed phases, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form a visually attractive pattern within said at least a second

phase, whereby said pattern is observable through said at least partially transparent packaging material.

According to yet still an additional feature of the invention there is provided a therapeutic skin composition containing an effective amount of a least one therapeutically active ingredient for treating the skin of an individual whose skin is sensitive to such therapy, said composition contained in a transparent container, said composition comprising at least two separate dispersed phases, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form a visually attractive pattern within said at least a second phase, whereby said pattern is observable through said container.

Briefly stated, an apparatus is provided that can have two or more products filled in the same container having a swirl-like pattern. Each product can have completely different chemical and physical properties. Thus, each product can have a different function and purpose.

According to an embodiment of the present invention, there is provided a method of forming spiral compositions, comprising the steps of: providing at least two compounds, arranged in separate storage bins each having a pump and a hose attached thereto; rotating a container, for receiving a resulting product formed by the at least two, into position relative to a support and alignment funnel; pumping the at least two compounds through the respective hoses into a nozzle assembly having at least two nozzles for filling the container; and combining predetermined amounts of each of the at least compounds for creating the resulting product housed in a single container, wherein the resulting product has the at least two compounds formed in a spiral configuration.

According to an embodiment of the present invention, there is provided a method of forming spiral compositions, comprising the steps of: providing at least two compounds, arranged in separate storage bins each having a pump and a hose attached thereto; placing a container, for receiving a resulting product formed by the at least two, in a position relative to a support and alignment funnel; pumping the at least two compounds through the respective hoses into a nozzle assembly having at least two nozzles for filling the container; and combining predetermined amounts of each of the at least compounds for



creating the resulting product housed in a single container, wherein the resulting product has the at least two compounds formed in a spiral configuration.

According to an embodiment of the present invention, there is provided an apparatus for filling a container with a resulting product having at least two compositions  
5 formed in a spiral configuration, comprising: a nozzle assembly having at least two nozzles coupled together in a close configuration; at least two pumps for pumping each of the compositions stored in separate composition storage bins each interconnected by a suction hose to each pump; at least two hoses interconnected to the nozzles and the pumps; a support and alignment funnel coupled to the apparatus for supporting the container to be  
10 filled in an upright position; a drive motor coupled to the nozzle assembly adapted to move the nozzle assembly in a vertical direction during filling of the container; and a spinning motor coupled to a spinning puck that supports the container and rotates the container during filling of the container.

According to an embodiment of the present invention, there is provided an  
15 apparatus for filling a container with a resulting product having at least two compositions formed in a spiral configuration, comprising: a nozzle assembly having at least two nozzles coupled together in a close configuration; at least two pumps for pumping each of the compositions stored in separate composition storage bins each interconnected by a suction hose to each pump; at least two hoses interconnected to the nozzles and the pumps;  
20 a support and alignment funnel coupled to the apparatus for supporting the container to be filled in an upright position; a drive motor coupled to the nozzle assembly adapted to rotate the nozzle assembly and move it in a vertical direction during filling of the container; and a base that supports the container during filling of the container.

#### DESCRIPTION OF THE DRAWINGS

25 Fig. 1(a) illustrates a front view of an apparatus that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention;

Fig. 1(b) illustrates a front view of an apparatus that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention;

Fig. 1(c) illustrates a front view of an apparatus that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention.

Fig. 2 illustrates a rear view of an apparatus having a control mechanism that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention;

Fig. 3 illustrates a cross-sectional view of three examples of nozzle configurations according to an embodiment of the present invention;

Fig. 4 illustrates a side view of an example of an opening of a nozzle assembly according to an embodiment of the present invention;

Fig. 5 illustrates a view of an apparatus that may create at least a dual-phase spiral product according to one embodiment of the present invention;

Fig. 6 illustrates a view of a nozzle assembly that may create at least a dual-phase spiral product according to one embodiment of the present invention; and

Fig. 7 illustrates a partial view of an assembly that may be used to fill multiple containers according to one embodiment of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

The present inventors have discovered that they can provide a dual phase, or dueling spiraled product housed in one container which is both visually attractive and functional. As discussed above, one approach not adequately explored to date involves a new delivery system using a toothpaste-like filling concept, with one of the two usual steps eliminated, and applying the same to a desired product. This invention allows the

generation of a wide variety of multi-phase products, especially those nearly impossible to formulate with chemicals or alternate systems (i.e., ascorbic acid or clear shower gel with a high level of silicones). The present invention is also particularly useful for forming multi-phase products that tend to "bleed" color from one phase to another and those where  
5 the individual compositions forming the product are particularly thick. For example, the present invention could even be used to create a swirled composition from substances having the consistency of gelatin and crushed fruit.

The method, apparatus and composition of the present invention allow for the ready production of swirled compositions. Further, the present method and apparatus  
10 allow for the production of significant quantities of finished product. For example, the manufacturing line as shown in Figures 1(b) and 1(c) is capable of producing in excess of 100 units per minute. The ability to generate production runs of such significant magnitude is one of the most important features of the present invention. This provides an important advantage over the prior art, in which the amount of product that could be  
15 formed is limited, typically to 10 or fewer units per minute.

The present inventors have further discovered that dual-phase compositions are most favorably disposed within single containers for many cosmetic industry applications. In solving the problems discussed above with respect to creating chemically integrable products, issues with respect to filling containers with the resulting compositions have  
20 generated their own respectively innovative solutions.

Namely, the present inventors have fabricated a one-step process that allows the filling of a product having two or more compounds with ratios and patterns that are quite variable, yet makes a durable resulting product. The flexibility achieved by the instant teachings has resulted in a novel enhanced spiral fill that overcomes the pitfalls created as  
25 artifacts of the toothpaste-based processes. This approach enables the dispensing of the product in a more uniform and aesthetically pleasing fashion, in addition to an improved display.

As mentioned below, the most studied prior art attempted to address the problem solved by the teachings of the present invention was a hair gel where a white product was  
30 filled inside of a clear gel. The product was filled using a two-step process. First, the

clear gel was filled with an Arenco tube, and then in a modified registration station, the spiral was filled with a diving nozzle and a peristaltic pump.

According to this disclosure, formation of the spiral required spinning the tube of the clear gel and then submerging the nozzle to the bottom of the tube. While the nozzle  
5 was then lifted up, the peristaltic pump started and operated until the nozzle came close to the top of the clear product. The next step was stopping and reversing the flow of the white product. In addition to the cost factors, high degrees of mechanical and systemic failures resulted from this two-step process.

Conventional spiral fills have been subject to these same constraints, and by way  
10 of further example, known designs in clear gel are priced at between \$50.00 and \$100.00, per container and require two-step processes, both of which urge strongly against their industrial efficacy. This is in addition to the fact that such disclosure has little durability.

Similarly, and in contrast to the instant teachings, toothpaste-tube-filling  
15 technology works by simultaneously filling tubes in straight lines that show through transparent windows in the sides of the tubes. While such efforts are dictated by ornamental constraints, neither method can perform the process in fewer than two steps.

Fig. 1(a) illustrates a front view of an apparatus that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention. A drive motor drive assembly 101 is shown, which is coupled to the filling  
20 nozzle assembly 111. The drive motor drive assembly 101 is adapted to move the filling nozzle assembly 111 in a vertical direction for filling a container with the resulting product. Fig. 1(a) illustrates a nozzle assembly 111 having two nozzles. It should be understood by one skilled in the art that there may be more than two nozzles incorporated into a nozzle assembly 111 depending upon the resulting product to be created. That is, if  
25 the resulting product is to have 3 phases, three nozzles may be required. The nozzle assembly 111 may be further supported by a nozzle support assembly 105 coupled to the apparatus.

The embodiment of the present invention illustrated in Fig. 1(a) also includes a spinning motor 113, arranged next to a spinning puck 115, which is underneath a support

and alignment funnel 100. The support and alignment funnel 100 and the spinning puck 115 hold up the container (or tube) during the filling process. The spinning puck 115 is driven by the spinning motor 113, which provides the mechanical capability to rotate the spinning puck 115, thus rotating the container, during the filling process.

5           While a spinning puck 115 may be used with any container, they are particularly useful with containers that are not circular. Circular containers have a center point about which they may smoothly rotate during the filling process. In contrast, oval or non-circular shapes must be carefully controlled during the filling process to ensure that the phases of the filling material are appropriately distributed within the container.

10           Fig. 1(b) illustrates a front view of an apparatus that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention. In the embodiment of the present invention depicted in Fig. 1(b), the spinning puck 115 may be rotated by a belt 151 which is in contact with at least a side portion of the spinning puck. If the puck 115 is rotated by a belt that is in contact with at least a side  
15           portion of the puck 115, at least a portion of the side of the puck 115 should have a primarily circular circumference so that the belt 151 may smoothly rotate the puck 115.

As shown in Fig. 1(b), the spinning puck 115 has sides 150 that extend in the direction of the sides of the container being filled and a circular circumference portion 155 that may be seen towards the bottom of the sides of the puck. This provides support and  
20           even rotation to the container being filled. In this configuration, the spinning motor 113 (not shown) is located so as to drive a belt 151, which in turn provides rotational movement to the spinning puck 115. The belt 151 may operate in any manner that is known in the art to rotate objects with a belt or belts. In the configuration shown in Fig. 1(b), the belt 151 acts to move the spinning puck 115 or pucks 115 towards the side 152 of  
25           the conveyor belt 153. A halt bar 154 to prevent the spinning pucks from leaving the filling area before the containers they carry are filled with product may be provided. However, it should be understood by one skilled in the art that the belt 151 may be so configured that a halt bar 154 is not required.

Fig. 1(c) illustrates a front view of an apparatus that performs the process of  
30           creating at least a dual-phase spiral product according to an embodiment of the present

invention. Two containers 160 that have been filled with a composition in a spiral configuration may be seen. A portion of brace 162 may also be seen. Brace 162 serves to brace the containers 160 in position as they are being filled by the filling nozzle assembly 111. While only 2 nozzle assemblies 111 are shown in Fig. 1(c), it should be understood  
5 by one of ordinary skill in the art that any number of nozzle assemblies may be included in an apparatus of the present invention. As shown in Fig. 1(c), conveyor belt 153 moves the containers 160 into position adjacent to brace 162. This movement into position may be assisted by a belt or other moving portion that pushes the container 160 into the curve of the brace 162. The exit of filled containers from proximity to the brace 162 may be  
10 assisted by a roller 165 or rollers coupled to the brace 162.

There are also pumps 107, 135 (see Fig. 2) for pumping each of the compositions (that will form the resulting product) stored in separate composition storage bins through hoses 103, 109 that are interconnected to the pumps (107, 135) and the nozzle assembly 111. The pumps may be gear-type pumps, or piston-type pumps. Preferably, piston-type  
15 pumps are used because they provide a more precise delivery of the compositions stored in the storage bins.

Fig. 2 illustrates a rear view of an apparatus having a control mechanism that performs the process of creating at least a dual-phase spiral product according to an embodiment of the present invention. The first pump 107 and a second pump 135 are  
20 shown at the rear of the apparatus. Connected to the pumps 107, 135 are suction hoses 127, 137, which are interconnected with the separate composition storage bins.

Fig. 2 illustrates a flow rate controller 121, 133 for controlling the flow rates of each of the pumps 107, 135. A fill-time timer 123 is provided on the apparatus to determine the amount of time required to fully fill a container of the resulting product.  
25 There is also a spin speed controller 117 on the apparatus to control the rotational velocity of the spinning puck 115. A dive and rise after fill speed controller 119 allows the user to control the speed of the nozzle assembly 111 as it moves in the vertical direction before and after the filling operation. The control box for lifting and spinning 129 houses the electronics and circuitry for controlling the spinning motor 113 and the drive motor dive  
30 assembly 101. There is also a rise during fill speed controller 131 on the apparatus that

allows the user to control the speed of the nozzle assembly as it moves up in the vertical direction during the filling operation.

Fig. 3 illustrates a cross-sectional view of three examples of nozzle opening configurations 300, 301, 302, each producing a dual-phase composition according to an embodiment of the present invention. Each of these three nozzle opening configurations 300, 301, 302 will produce a resulting product with different spiral configurations. The arrangement of the nozzle openings with the type of material to be dispensed may be of a variety of combinations, and Fig. 3 illustrates only three exemplary samples.

Fig. 4 illustrates a side view of an example of an opening of a nozzle assembly 111 according to an embodiment of the present invention. For example, a clear gel may be dispensed from the center of the nozzle 400, while colored/contrast materials may be dispensed from the nozzle openings on the sides 401, 402. Any suitable arrangement may be made in order to produce a specific spiral configuration of the resulting product.

Fig. 5 illustrates a view of an apparatus that may create at least a dual-phase spiral product according to one embodiment of the present invention. A drive motor drive assembly 501 is shown, which is coupled to a rotational flow assembly 511. The drive motor drive assembly 501 is adapted to rotate the rotational flow assembly 511 while moving it in a vertical direction for filling a container with the resulting product. One skilled in the art should understand that multiples of the drive motor drive assembly 501/rotational flow assembly 511 combination may be placed in one location. In this embodiment of the present invention, multiple containers may be filled at a time. This shortens the time required to produce a number of filled containers.

There are also pumps for pumping each of the compositions (that will form the resulting product) stored in separate composition storage bins through hoses 503, 509 that are interconnected to the pumps and the nozzle assembly 511. Pump 507 may be seen in Fig. 5. The second pump is not shown. The pumps may be gear-type pumps, or piston-type pumps. Preferably, piston-type pumps are used because they provide a more precise delivery of the compositions stored in the storage bins.

The rotational flow assembly 511 depicted in Fig. 5 may be moved without breaking or adversely affecting its connection to hoses 503, 509.

The embodiment of the present invention illustrated in Fig. 5 also includes a base 515, which is underneath a support and alignment funnel 500. The support and alignment  
5 funnel 500 and the base 515 hold up the container (or tube) during the filling process.

The embodiment of the present invention shown in Fig. 5 illustrates a nozzle assembly 511 having two nozzles. It should be understood by one skilled in the art that, depending on the resulting product to be created, there may be more than two nozzles incorporated into the nozzle assembly 511. The nozzle assembly 511 may be further  
10 supported by a nozzle support assembly 505 coupled to the apparatus. Such support assembly 505 should be structured as to permit, or even facilitate, the rotating of the nozzle assembly 511. In one embodiment of the present invention (not shown), support assembly 505 may encircle a portion of the nozzle assembly to provide circumferential support.

15 Fig. 6 illustrates a view of a nozzle assembly that may create at least a dual-phase spiral product according to one embodiment of the present invention. This assembly includes a spinning nozzle 601 that is composed of at least two tubes 610 and 611. Each tube 610, 611 may be used to place a different composition in the product container. For example, composition A may be added through tube 610, while composition B may be  
20 added through tube 611. Tubes 610, 611 extend through o-rings or other seals 603 and bushing 602. The compositions are dispensed through the end 612 of the respective tube through which they are delivered. The tubes 610, 611 are connected to the system via floating manifolds 604.

It should be understood by one skilled in the art that, while Fig. 6 depicts only two  
25 tubes, a larger number of tubes could also be used to produce a more complicated and detailed swirl design. The larger number of tubes also allows for a higher number of ingredients that may be added to the product. However, it is not necessary to add a higher number of ingredients to a product if additional tubes are present.



Fig. 7 illustrates a partial view of an assembly that may be used to fill multiple containers according to one embodiment of the present invention. There is a conveyor 707 that may be used to deliver the containers 702 to a location where they may be filled by nozzle 701. This conveyor 707 may also remove the filled containers from the apparatus.

5 The conveyor 707 may be any conveyor as is known in the art that is capable of moving containers into a position where they may be filled. The conveyor 707 should be capable of presenting the containers in an orientation whereby they may be ready to be filled by the nozzle 701 when positioned appropriately. If the conveyor 707 cannot deliver the containers 702 in this manner, the apparatus should include a mechanism that is capable of

10 so orientating the containers.

As shown in Fig. 7, containers 702 are placed on spinning pucks 703 by conveyor 707 so that they may be rotated during the filling process. It should be understood by one skilled in the art that in an alternate embodiment of the present invention the apparatus may be designed so that the nozzle 701 rotates while the container 702 remains stationary.

15 For example in one embodiment of the present invention, the apparatus is configured so that the tubes running to the nozzles are arranged at different heights. In this manner, the nozzles and tubes may rotate without becoming entangled. In a still further embodiment of the present invention, both the nozzle and the container may rotate.

The filling of a container (or tube) may take place as follows. The dispensing end

20 of the nozzle assembly 511 is placed within a container (or tube), and adjacent to its lower end. This may be achieved by lowering the nozzle assembly using the drive motor drive assembly 501. Alternatively, the base 515 may be designed to raise the container (or tube) so that the nozzle assembly 511 is located adjacent to the bottom of the container at the beginning of the filling cycle. The product is then drawn from each hopper and urged into

25 the container (or tube) while the nozzle assembly 511 is rotated and the distance between the lower end of the container (or tube) is increased. This distance may be increased by raising the nozzle assembly 511. For example, the drive motor drive assembly 501 may act to keep the nozzle at a predetermined and fixed distance from the surface of the product as the container (or tube) is filled. Alternatively, the base 515 may be designed to be lowered

30 at a given rate as the product is dispensed into the container (or tube). The movement of the nozzle assembly, pumping of the product and other functions of the apparatus may be

integrated and controlled by a programmable logic controller (not shown). The programmable logic controller may be programmed to send signals to the pumps and the drive motor to direct their activity so that they produce a desired swirled design.

Multiple factors contribute to the formation of the design of the spiral compositions according to the present invention. Clearly, the composition, chemical characteristics and viscosity of the individual compositions play a role. For example, the present invention may be used to create swirled products that include ascorbic acid or clear shower gels having a colored, swirl design, with a high level of silicones. The rotating of the nozzle assembly and the distance between the nozzle tip and the surface of the product are also critical to creating the design of the products.

It should be understood that the nature of the body being rotated, the container or the nozzle, is not critical. Likewise, the raising of the nozzle or the lowering of the container is not critical. It is the relative rotation of the nozzle and the container, and their relative movement away from each other during dispensing (referred to as relative vertical movement), which provides the swirl of the present invention.

In one embodiment of the present invention, the multiple-phase swirled composition has a clear gel phase and a lotion phase. By having different ratios of the two products different needs, applications and skin types may be addressed.

The gel phase may be aqueous or anhydrous. The aqueous system includes water, a humectant, and skin moisturizers and conditioners. Table 1 provides an example of an aqueous system. The moisturizers and conditioners may be varied depending on the use for which the composition is intended. The anhydrous system includes non-aqueous thickeners. The lotion phase typically takes the form of an emulsion. An example of the lotion phase may be seen at Table 2. For example, the lotion phase could be a water in oil emulsion, a water in oil with water resistance emulsion, an oil in water emulsion, a water in silicone emulsion or a silicone in water emulsion. Alternatively, a multiple-phase emulsion may be used.

A first example for the Dual Spiral Product according to a preferred embodiment of the present invention, comprises first a Gel Phase, and according to the instant teachings a clear gel phase can have either an:

- i. Aqueous System; or an
- 5 ii. Anhydrous System.

An Aqueous System according to the teachings of the present invention consists mainly of the oldest and the best moisturizing agent — water. Water is the most important hydrating ingredient for the skin. The gel system we have created consists of adequate levels of humectant (humectants have an affinity for water).

- 10 In addition to the humectant, there are balanced levels of skin moisturizers and conditioners to maintain a healthy, glowing skin. The gel system will always maintain a clear appearance. The clear appearance will create a great visual effect on the finished product. The gel system will normally come in different colors, different chemicals and physical properties. The different colors will give us the possibilities to call out certain
- 15 flavors and actives (i.e., extracts, moisturizers, etc.). Having different chemicals and physical properties allows us to create numerous personal care products (i.e., facial and body treatments, cationic, non-ionic, etc.). Clear aqueous gel systems normally have excellent hydrating and moisturizing properties.

- 20 A preferred embodiment of a gel system (aqueous) is based on carbomer, lubragel, polymer, and different humectant chemistry to give us different textures and, most importantly, product stability. An Anhydrous System, according to the teachings of the present invention, is comprised of non-aqueous thickeners, and those skilled in the art will readily understand agents that function effectively within this context.

A Lotion Phase or Emulsion, further comprises, at least one of:

- 25 iii. Water In Oil Emulsion;
- iv. Water In Oil With Water Resistance Emulsion;
- v. Oil in Water Emulsion;
- vi. Water In Silicone Emulsion;

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- vii. Silicone In Water Emulsion; and
- viii. Multiple Phase.

As indicated, according to a preferred embodiment a lotion phase has multiple possibilities with known emulsion systems as indicated. Multiple possibilities and  
5      embodiments are offered for the Lotion Phase to provide a wide variation of products and, most importantly, enhanced stability.

A particularly preferred embodiment above listed Romanette ii. We have selected the water in oil with water resistance emulsion to enhance the product stability to co-exist with another product.

10           The emulsion system we have developed contains essential refatting ingredients. This system contains the proper essential vitamins, humectants, and conditioners. We have used polymer, carbomer, crosspolymer, silicone and polytrap chemistry. The combination of these ingredients allows us to develop a wide variety of products with different physical and chemical properties.

15           A second example is a Dual Spiral Product Gel/lotion Combination. As discussed, we have developed a unique delivery system by filling two completely different products (chemical properties) in the same container. The product is designed to give us:

- ix. A visually appealing product.
- x. A unique delivery system that enables each product to compliment  
20           the other.
- xi. The ability to work with a wide variety of products with unstable or hard to formulate chemicals (i.e., ascorbic acid).
- xii. A multiple functioning product (i.e., a moisturizing and conditioning clear alcoholic gel with a high fragrance level).

25           As indicated above, a wide variety of functions are attained according to the instant teachings. The system has an additional unique property in that it entraps moisture (from the gel) on the skin and protect the skin with the water-resistant lotion, in addition to working in combination with know coloring agents, as will be clear to artisans.

According to this preferred embodiment, the product delivers immediate moisturizing, conditioning, and refatting properties, depending on the fill ratio of the two products, which makes it very interesting. By having different ratios of the two products, we can address different needs, applications and skin types.

5           Finally, according to this preferred embodiment the system optionally has multiple phases (more than two). The combination of products which may be generated for separate cosmetic applications is therefore de-limited.

Set forth hereafter are Table 1 and Table 2, further comprising specific formulations of dual phase compositions according to the instant teachings. Table 1  
10 includes product specifications for a Dual Spiral Body Lotion, while Table 2 is a Spiral Product which is ideally suited for use as a Body Lotion.

It is noted that United States Patent No. D429,146, filed April 20, 1999 is expressly incorporated herein by reference. This patent covers the ornamental appearance of subject spiral compositions invented by the present inventors and subject to an  
15 assignment to the present assignee.

Likewise, the composition of the present invention has been used to generate a plurality of related ornamental designs, ranging from basic spiral configurations to doubles helices, twisted and inverted helices and the like novel enhanced visually pleasing product configurations. It is noted that an additional and important attribute of the instant  
20 teachings is the durability of the subject designs, which are currently being produced, tested, and formulated (Thibiant International, 8601 Wilshire Boulevard, Suite 110, Beverly Hills, California 90211) with an ability to withstand the normal forces involved in packaging, shipping and shelving so that they maintain their configuration until the same are dispensed by consumers.

25           Having described preferred embodiments of the composition of the invention, it is to be understood that the invention is not limited to those precise embodiments, and that various changes and modifications may be effected therein by one of skill in the art without departing from the scope or spirit of the invention as defined in the appended claims, which are listed after Tables 1 and 2, each of which is expressly incorporated herein by

reference as part of the specification and detailed description of preferred embodiments of the present invention.

**TABLE 1 - DUAL SPIRAL - BODY LOTION**

5	<u>INGREDIENTS</u>	<u>WT/WT %</u>	
	WATER	51.5	- 85
	THICKENERS	1.1	- 1
	CHELATING AGENTS	0.1	- 1
10	PRESERVATIVES	0.1	- 1
	UV-ABSORBERS	0.1	- 1
	HUMECTANTS	2	- 6
	VITAMINS	0.1	- 1
	ESTERS	4	- 0
15	EMULSIFIERS	1	- 4
	FATTY ALCOHOLS	1	- 4
	FILM FORMERS	1	- 4
	SILICONES	4	- 10
	POLYTRAPS	1	- 4
20	DIMETHICONES	0.5	- 1.5
	TOTAL 100%		

**TABLE 2 - SPECIAL PRODUCT - BODY GEL**

	<u>INGREDIENTS:</u>	<u>WT/WT%</u>	
25	WATER	62.5	- 91.85
	CARBOMER	0.4	- 1
	PRESERVATIVES	0.05	- 1
	HUMECTANTS	1	- 6
	CHELATING AGENT	0.1	- 1
30	UV-ABSORBERS	0.1	- 1

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	MOISTURIZER/CONDITIONERS	0.5	-	3
	SURFACTANTS	0.1	-	1
	POLYMETHACRYLATES	5	-	20
	DIMETHICONES	0.7	-	1.5
5	VITAMINS	0.1	-	1
	HEAVY METALS	<u>0.1</u>	-	<u>1</u>
	TOTAL	100%		

10 The compounds and compositions dispensed by the apparatus of the present invention are not limited to cosmetic and/or health care products. Any liquid or semi-liquid compound may be dispensed from the storage bins, including different colored waxes for making candles having novel spiral configurations. Plastics and other polymer materials may also be dispensed, and novel spiral configurations may also be formed by the apparatus of the present invention using these materials.

15 Having described preferred embodiments of the invention with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments, and that various changes and modifications may be effected therein by one of ordinary skill in the art without departing from the scope or spirit of the invention as defined in the appended claims.

**WHAT IS CLAIMED IS:**

1. A readily flowable composition having a swirled shape contained in a generally transparent container, said composition comprises two substantially dispersed phases of similar viscosity with substantial phase separation at all points of contact between the two phases, and wherein the first phase comprises:
  - from about 51.5 to about 85 percent by weight water;
  - from about 1 to about 1.1 percent by weight thickeners;
  - from about 0.5 to about 1.5 percent by weight dimethicones;
  - from about 1 to about 4 percent by weight fatty alcohols;
  - from about 4 to about 10 percent by weight silicones; and
  - from about 1 to about 4 percent by weight emulsifiers,and wherein the second phase comprises:
  - from about 62.5 to about 91.85 percent by weight water;
  - from about 0.4 to about 1 percent by weight carbomer;
  - from about 0.7 to about 1.5 percent by weight dimethicones;
  - from about 0.1 to about 1 percent by weight surfactant; and
  - from about 5 to about 20 percent by weight polymethacrylates,and wherein at least one of the phases contains a colorant and wherein the phase separation boundary between the two phases promotes product stability by limiting the ability of the phases to mix with one another so that the transparent container having the swirled composition has a stable shelf life.
2. The composition as recited in claim 1, wherein at least one of the phases further consists of from about 0.5 to about 3 percent by weight moisturizers and conditioners selected from the group consisting of vitamins, antioxidants, pH modifying agents, moisturizing agents, astringents, skin lubricants and emollients.
3. The composition as recited in claim 1, wherein at least one of the phases further includes from about 1 to 6 percent by weight humectants.



4. The composition as recited in claim 1, wherein at least one of the phases further includes from about 0.1 to about 1 percent by weight of a chelating agent.
5. The composition as recited in claim 1, wherein at least one of the phases further includes from about 0.1 to about 1 percent by weight uv-absorbers.
- 5 6. The composition as recited in claim 1, wherein at least one of the phases further includes from about 0.1 to 1 percent by weight vitamins.
7. The composition as recited in claim 1, wherein at least one of the phases further includes from about 1 to about 4 percent by weight film formers.
8. A method for treating skin, said method comprising the application of a skin  
10 composition containing an effective amount of at least one ingredient selected from the group consisting of vitamins, antioxidants, hormones, pH modifying agents, moisturizing agents, astringents, anesthetics, antimicrobials, antipsoriatic agents, anti-acne agents, anti-dandruff agents, scabicides, skin lubricants, pediculocides, keratolytics, sunscreens, agents to increase pigmentation, agents to decrease pigmentation, skin protectants, and emollients  
15 for treating the skin of an individual whose skin is in need of treatment, wherein said composition is contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form a visually perceptible  
20 pattern within said at least a second phase, whereby said pattern is observable through said container.
9. A method for treating skin, the method comprising the application of a skin composition, wherein the composition is a readily flowable composition having a swirled shape comprising two substantially dispersed phases of similar viscosity with substantial  
25 phase separation at all points of contact between the two phases, and wherein the first phase comprises:
  - from about 51.5 to about 85 percent by weight water;
  - from about 1 to about 1.1 percent by weight thickeners;
  - from about 0.5 to about 1.5 percent by weight dimethicones;
  - 30 from about 1 to about 4 percent by weight fatty alcohols;
  - from about 4 to about 10 percent by weight silicones; and

from about 1 to about 4 percent by weight emulsifiers,

and wherein the second phase comprises:

from about 62.5 to about 91.85 percent by weight water;

from about 0.4 to about 1 percent by weight carbomer;

5 from about 0.7 to about 1.5 percent by weight dimethicones;

from about 0.1 to about 1 percent by weight surfactant; and

from about 5 to about 20 percent by weight polymethacrylates,

and wherein at least one of the phases contains a colorant and wherein the phase  
separation boundary between the two phases promotes product stability by limiting the  
10 ability of the phases to mix with one another so that an article of manufacture having the  
swirled composition has a stable shelf life.

10. A method for treating scalp ailments, said method comprising the application of an  
effective amount of a composition of claim 1 combined with a therapeutically active  
ingredient selected from the group consisting of antipsoriatic agents, scabicides,  
15 pediculocides, and keratolytics, to the scalp of an individual with a scalp ailment.

11. A method for conditioning the hair, said method comprising the application of an  
effective amount of a composition of claim 1 for washing the hair of an individual whose  
hair requires conditioning.

12. An article of manufacture, comprising packaging material and a composition  
20 contained in a single generally transparent container, said composition comprising at least  
two separate substantially dispersed phases selected to maintain a visually perceptible  
pattern over a period of time, wherein at least a first phase is colored with an effective  
amount of a coloring agent to contrast with at least a second phase, whereby said at least a  
first phase is disposed to form said pattern within said at least a second phase, whereby  
25 said pattern is observable through said container; said composition selected from the group  
consisting of :

therapeutic skin compositions containing an effective amount of at least one  
dermatologically active ingredient for treating the skin of an individual whose skin  
is in need of such therapy;

moisturizing and conditioning skin compositions containing an effective amount of at least one moisturizing and conditioning ingredient for treating the skin of an individual whose skin is in need of moisturizing and conditioning; and, shampoo compositions for application to the hair and scalp of an individual in need of such application, said shampoo compositions selected from the group consisting of:

- therapeutic shampoo compositions containing an effective amount of at least one therapeutically active ingredient for treating the scalp of an individual whose scalp is in need of such therapy;
- conditioning shampoo compositions containing an effective amount of at least one conditioning ingredient for conditioning the hair of an individual whose hair is in need of conditioning; and,
- coloring shampoo compositions containing an effective amount of at least one coloring ingredient for coloring the hair of an individual whose hair is in need of coloring.

- 13. The article as recited in claim 12, wherein said at least two separate substantially dispersed phases include at least one water continuous phase and at least one oil continuous phase.
- 14. The article as recited in claim 12 wherein said visually perceptible pattern is a spiral.
- 15. The article as recited in claim 12 wherein said visually perceptible pattern is abstract.
- 16. The article as recited in claim 12, wherein said at least one moisturizing and conditioning ingredient is selected from the group consisting of vitamins, antioxidants, pH modifying agents, moisturizing agents, astringents, skin lubricants, humectants, and emollients.
- 17. The article as recited in claim 12, wherein said coloring agent is selected from the group consisting of colored mica, chlorophyll, carrot oil, and metallic based, i.e., copper, zinc, chromium, manganese, and iron, colorants as are well known in the art.
- 18. An article of manufacture, comprising packaging material and a composition contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases selected to maintain a visually perceptible

swirled appearance, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form said pattern within said at least a second phase, whereby said pattern is observable through said container; wherein the first phase comprises:

- 5       from about 51.5 to about 85 percent by weight water;  
          from about 1 to about 1.1 percent by weight thickeners;  
          from about 0.5 to about 1.5 percent by weight dimethicones;  
          from about 1 to about 4 percent by weight fatty alcohols;  
          from about 4 to about 10 percent by weight silicones; and  
10       from about 1 to about 4 percent by weight emulsifiers,  
          and wherein the second phase comprises:  
          from about 62.5 to about 91.85 percent by weight water;  
          from about 0.4 to about 1 percent by weight carbomer;  
          from about 0.7 to about 1.5 percent by weight dimethicones;  
15       from about 0.1 to about 1 percent by weight surfactant; and  
          from about 5 to about 20 percent by weight polymethacrylates,

and wherein at least one of the phases contains a colorant and wherein the phase separation boundary between the two phases promotes product stability by limiting the ability of the phases to mix with one another so that the article of manufacture having the  
20       swirled composition has a stable shelf life.

19.    A method of forming spiral compositions, comprising the steps of:  
          providing at least two compounds, arranged in separate storage bins each  
          having a pump and a hose attached thereto;  
          moving a container for receiving a resulting product formed by the at least  
25       two compounds into position relative to a support and alignment funnel;  
          pumping the at least two compounds through the respective hoses into a  
          nozzle assembly having at least two nozzles for filling the container;  
          rotating the nozzle assembly; and

- combining predetermined amounts of each of the at least two compounds  
for creating the resulting product housed in a single container, wherein the  
resulting product has the at least two compounds formed in a spiral configuration,  
and wherein the resulting product is selected from the group consisting of a facial  
5 cosmetic treatment, a cosmetic treatment for the body, a cationic personal care  
product, a non-ionic personal care product, a body gel, and a multi-phase  
composition.
20. The method of forming spiral compositions according to claim 19, wherein in the  
step of providing at least two compounds, the compounds are waxes.
- 10 21. A method of filling a container with a resulting product having at least a dual-  
phase composition, composed of at least two compounds in a spiral configuration, wherein  
the product is selected from the group consisting of a facial treatment, a cosmetic  
treatment for the body, a cationic personal care product, a non-ionic personal care product,  
and a body gel, the method comprising the steps of:
- 15 providing a filling apparatus having:
- a nozzle assembly having at least two nozzles coupled together in a close  
configuration,
  - at least two pumps for pumping each of the compounds stored in separate  
composition storage bins each bin being connected to one of the pumps by a  
20 suction hose,
  - hoses connecting the nozzles to the pumps,
  - a brace coupled to the apparatus for supporting the container to be filled in  
an upright position, and
  - a drive motor coupled to the nozzle assembly adapted to rotate the nozzle  
25 assembly and move the nozzle assembly in a vertical direction during filling of the  
container, and
  - a base located adjacent to the support and alignment funnel;  
mounting the container on the base;  
signaling a commencement step from the filling apparatus;

30 placing the nozzle assembly directly over the container and the support and  
alignment funnel;

dropping the nozzle assembly into the container whereby the tip of the nozzles are proximate to a bottom portion of the container;

providing relative rotational movement between the nozzle and the container at a predetermined number of revolutions per minute;

5 starting the at least two pumps;

providing relative vertical movement causing increased separation between the nozzle assembly and a bottom of the container;

controlling a rate of flow of each of the at least two compounds by the pumps; and

urging the at least two compounds through the respective hoses to fill the

10 container.

22. The method of filling a container with a resulting product according to claim 21, wherein at least one of the two compounds is a wax.

23. An apparatus for filling a container with a resulting product having at least two compositions formed in a spiral configuration, comprising:

15 a nozzle assembly having at least two nozzles coupled together in a close configuration;

at least two pumps for pumping each of the compositions stored in separate composition storage bins each interconnected by a suction hose to each pump;

at least two hoses interconnected to the nozzles and the pumps;

20 a support and alignment funnel coupled to the apparatus for supporting the container to be filled in an upright position;

a drive motor coupled to the nozzle assembly adapted to rotate the nozzle assembly and move the nozzle assembly in a vertical direction during filling of the container; and

25 a base located adjacent to the support and alignment funnel.

24. The apparatus for filling a container with a resulting product according to claim 23, wherein the resulting product is a multi-phase composition.

25. The apparatus for filling a container with a resulting product according to claim 23, further including a drive motor coupled to the base adapted to move the base in a vertical  
30 direction.

26. An apparatus for filling a container with a resulting product having at least two compositions formed in a spiral configuration, comprising:

a nozzle assembly having at least two nozzles coupled together in a close configuration;

at least two pumps for pumping each of the compositions stored in separate composition storage bins each interconnected by a suction hose to each pump;

5 at least two hoses interconnected to the nozzles and the pumps;

a support and alignment funnel coupled to the apparatus for supporting the container to be filled in an upright position;

10 a drive motor coupled to the nozzle assembly adapted to rotate the nozzle assembly and move the nozzle assembly in a vertical direction during filling of the container;

a base located adjacent to the support and alignment funnel; and

a programmable logic controller controllably linked to the apparatus, whereby the programmable logic controller provides operational signals to the pumps and the drive motor.

15

27. A method of filling a container with at least two compounds, wherein the resulting product is at least a dual-phase composition having a generally swirled, spiral configuration, and wherein the resulting product is a candle, or a composition selected from the group consisting of a facial cosmetic treatment, a cosmetic treatment for the body, a cationic personal care product, a non-ionic personal care product, a body gel, and combinations thereof, the method comprising the steps of:

providing a filling apparatus having:

storage bins for storing the compounds,

25 means in flow communication with the bins for pumping each of the compounds from the bins,

a nozzle assembly having a plurality of nozzles, the nozzles being in flow communication with the pumping means, and

support means coupled to the apparatus for supporting the container in an upright position;

30 contacting the container with the support means so that the nozzle assembly is

aligned adjacent the container and adapted to be in flow communication therewith;

turning the nozzle assembly at a predetermined rate; and

urging the compounds through the nozzles to fill the container while moving the nozzles vertically with respect to the container, thereby creating a resulting product that has at least two distinct phases.

28. A method of forming spiral compositions, comprising the steps of:

- 5                   providing at least two compounds, arranged in separate storage bins each having a pump and a hose attached thereto;
- moving a container, for receiving a resulting product formed by the at least two compounds, into position relative to a support and alignment funnel;
- pumping the at least two compounds through the respective hoses into a
- 10           nozzle assembly having at least two nozzles for filling the container; and
- combining predetermined amounts of each of the at least two compounds for creating the resulting product housed in a single container, wherein the resulting product has the at least two compounds formed in a spiral configuration, and wherein the resulting product is selected from the group consisting of a facial cosmetic treatment, a cosmetic treatment for
- 15           the body, a cationic personal care product, a non-ionic personal care product, a body gel, and a multi-phase composition.



## AMENDED CLAIMS

[Received by the International Bureau on 10 June 2002 (10.06.02):  
original claims 1, 9, 18: replaced by amended new claims 1, 9, 18:]

## WHAT IS CLAIMED IS:

1. A readily flowable composition having a swirled shape contained in a generally transparent container, said composition comprises two substantially dispersed phases of similar viscosity with substantial phase separation at all points of contact between the two phases, and wherein the first phase comprises:
- 5 from about 51.5 to about 85 percent by weight water;
- from about 1 to about 1.1 percent by weight thickeners;
- from about 0.5 to about 1.5 percent by weight dimethicones;
- from about 1 to about 4 percent by weight fatty alcohols;
- 10 from about 4 to about 10 percent by weight silicones; and
- from about 1 to about 4 percent by weight emulsifiers,
- and wherein the second phase comprises:
- from about 62.5 to about 91.85 percent by weight water;
- from about 0.4 to about 1 percent by weight carbomer;
- 15 from about 0.7 to about 1.5 percent by weight dimethicones;
- from about 0.1 to about 1 percent by weight surfactant; and
- from about 5 to about 20 percent by weight polymethacrylates,
- and wherein at least one of the phases contains a colorant.
2. The composition as recited in claim 1, wherein at least one of the phases further
- 20 consists of from about 0.5 to about 3 percent by weight moisturizers and conditioners selected from the group consisting of vitamins, antioxidants, pH modifying agents, moisturizing agents, astringents, skin lubricants and emollients.
3. The composition as recited in claim 1, wherein at least one of the phases further includes from about 1 to 6 percent by weight humectants.

25

from about 1 to about 4 percent by weight emulsifiers,

and wherein the second phase comprises:

from about 62.5 to about 91.85 percent by weight water;

from about 0.4 to about 1 percent by weight carbomer;

5 from about 0.7 to about 1.5 percent by weight dimethicones;

from about 0.1 to about 1 percent by weight surfactant; and

from about 5 to about 20 percent by weight polymethacrylates,

and wherein at least one of the phases contains a colorant.

10 10. A method for treating scalp ailments, said method comprising the application of an effective amount of a composition of claim 1 combined with a therapeutically active ingredient selected from the group consisting of antipsoriatic agents, scabicides, pediculocides, and keratolytics, to the scalp of an individual with a scalp ailment.

11. A method for conditioning the hair, said method comprising the application of an effective amount of a composition of claim 1 for washing the hair of an individual whose  
15 hair requires conditioning.

12. An article of manufacture, comprising packaging material and a composition contained in a single generally transparent container, said composition comprising at least two separate substantially dispersed phases selected to maintain a visually perceptible pattern over a period of time, wherein at least a first phase is colored with an effective  
20 amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form said pattern within said at least a second phase, whereby said pattern is observable through said container; said composition selected from the group consisting of:

therapeutic skin compositions containing an effective amount of at least one  
25 dermatologically active ingredient for treating the skin of an individual whose skin is in need of such therapy;

swirled appearance, wherein at least a first phase is colored with an effective amount of a coloring agent to contrast with at least a second phase, whereby said at least a first phase is disposed to form said pattern within said at least a second phase, whereby said pattern is observable through said container; wherein the first phase comprises:

- 5       from about 51.5 to about 85 percent by weight water;
- from about 1 to about 1.1 percent by weight thickeners;
- from about 0.5 to about 1.5 percent by weight dimethicones;
- from about 1 to about 4 percent by weight fatty alcohols;
- from about 4 to about 10 percent by weight silicones; and
- 10       from about 1 to about 4 percent by weight emulsifiers,
- and wherein the second phase comprises:
- from about 62.5 to about 91.85 percent by weight water;
- from about 0.4 to about 1 percent by weight carbomer;
- from about 0.7 to about 1.5 percent by weight dimethicones;
- 15       from about 0.1 to about 1 percent by weight surfactant; and
- from about 5 to about 20 percent by weight polymethacrylates,

and wherein at least one of the phases contains a colorant.

- 19.   A method of forming spiral compositions, comprising the steps of:
  - providing at least two compounds, arranged in separate storage bins each
  - 20       having a pump and a hose attached thereto;
  - moving a container for receiving a resulting product formed by the at least
  - two compounds into position relative to a support and alignment funnel;
  - pumping the at least two compounds through the respective hoses into a
  - nozzle assembly having at least two nozzles for filling the container;
  - 25       rotating the nozzle assembly; and

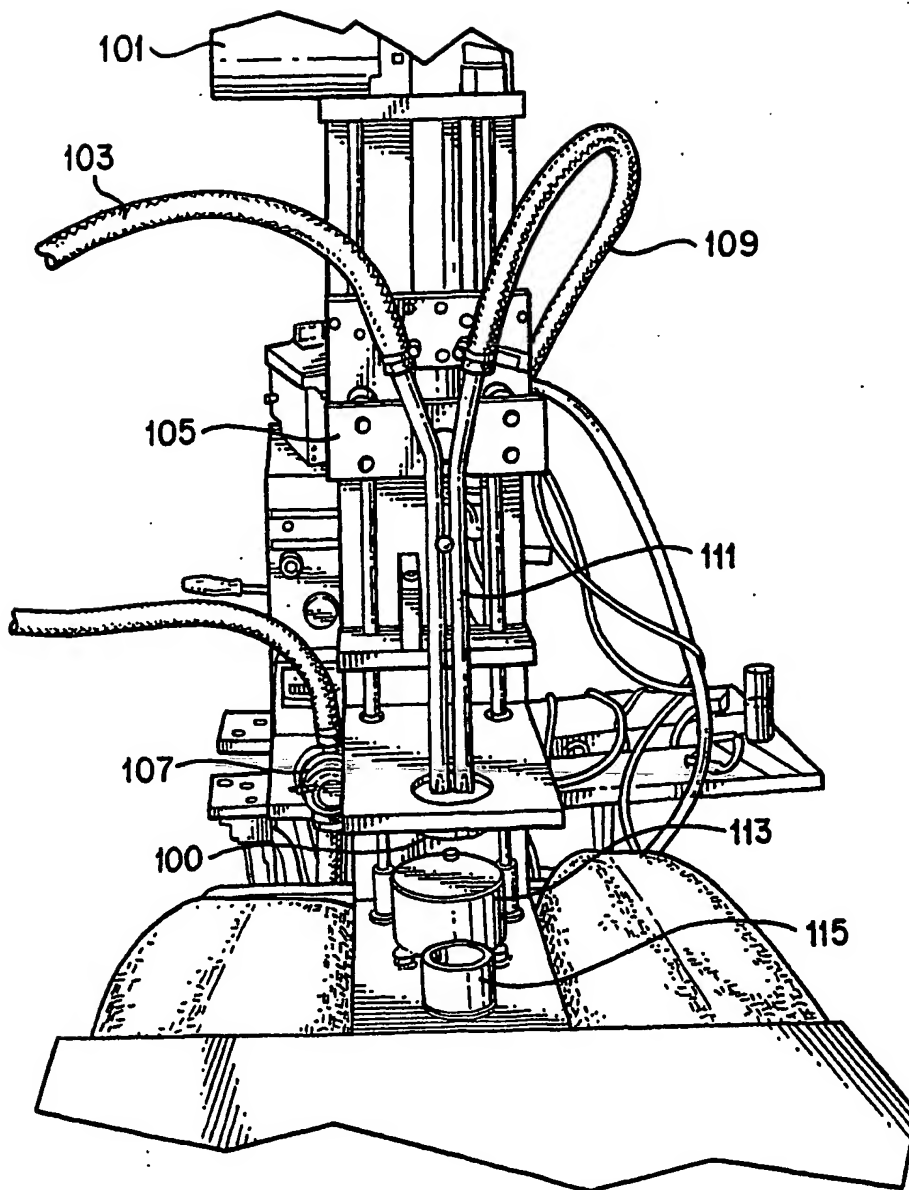


FIG. 1 (a)

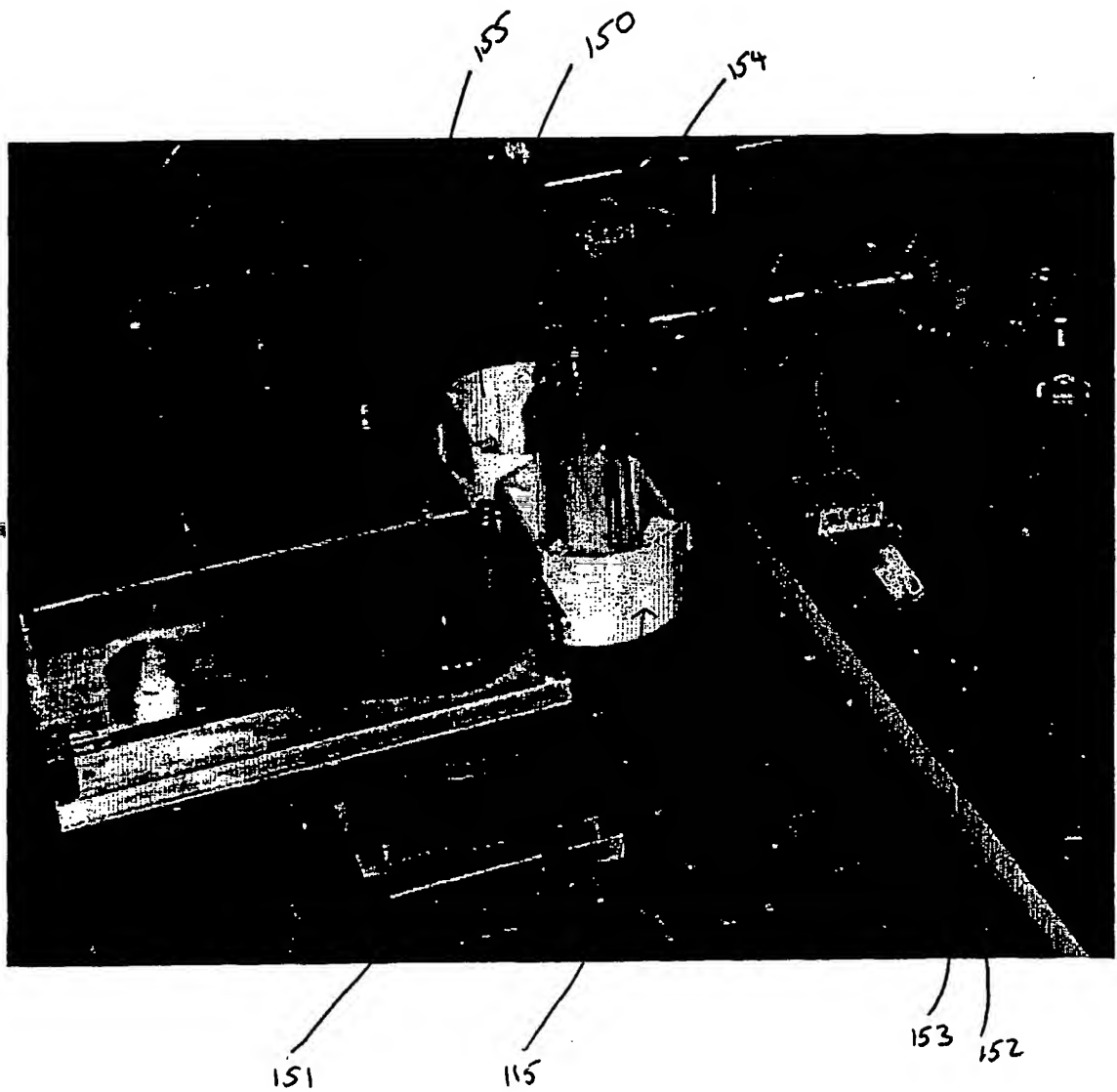


Fig 1(b)

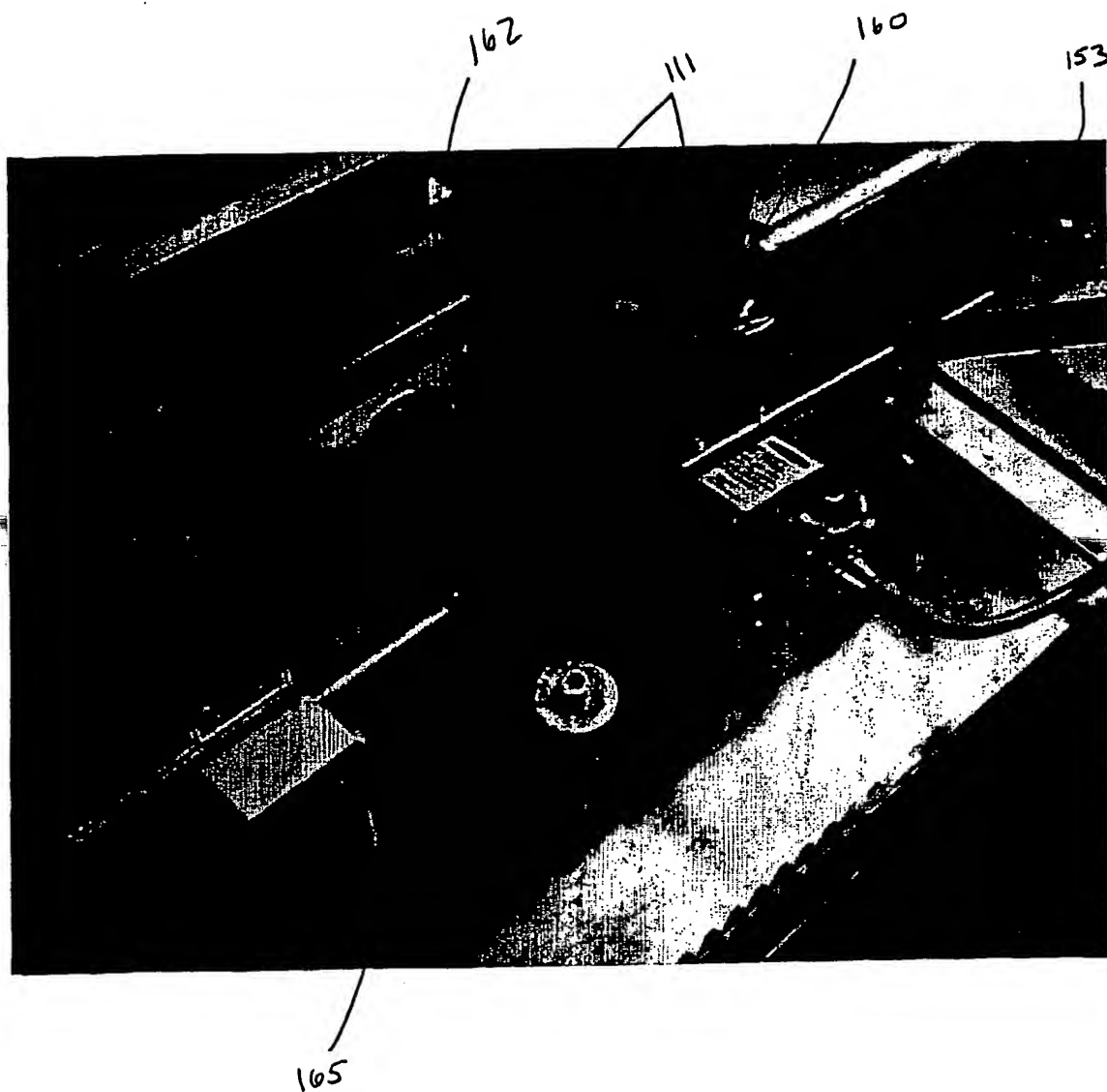


Fig 1(c)

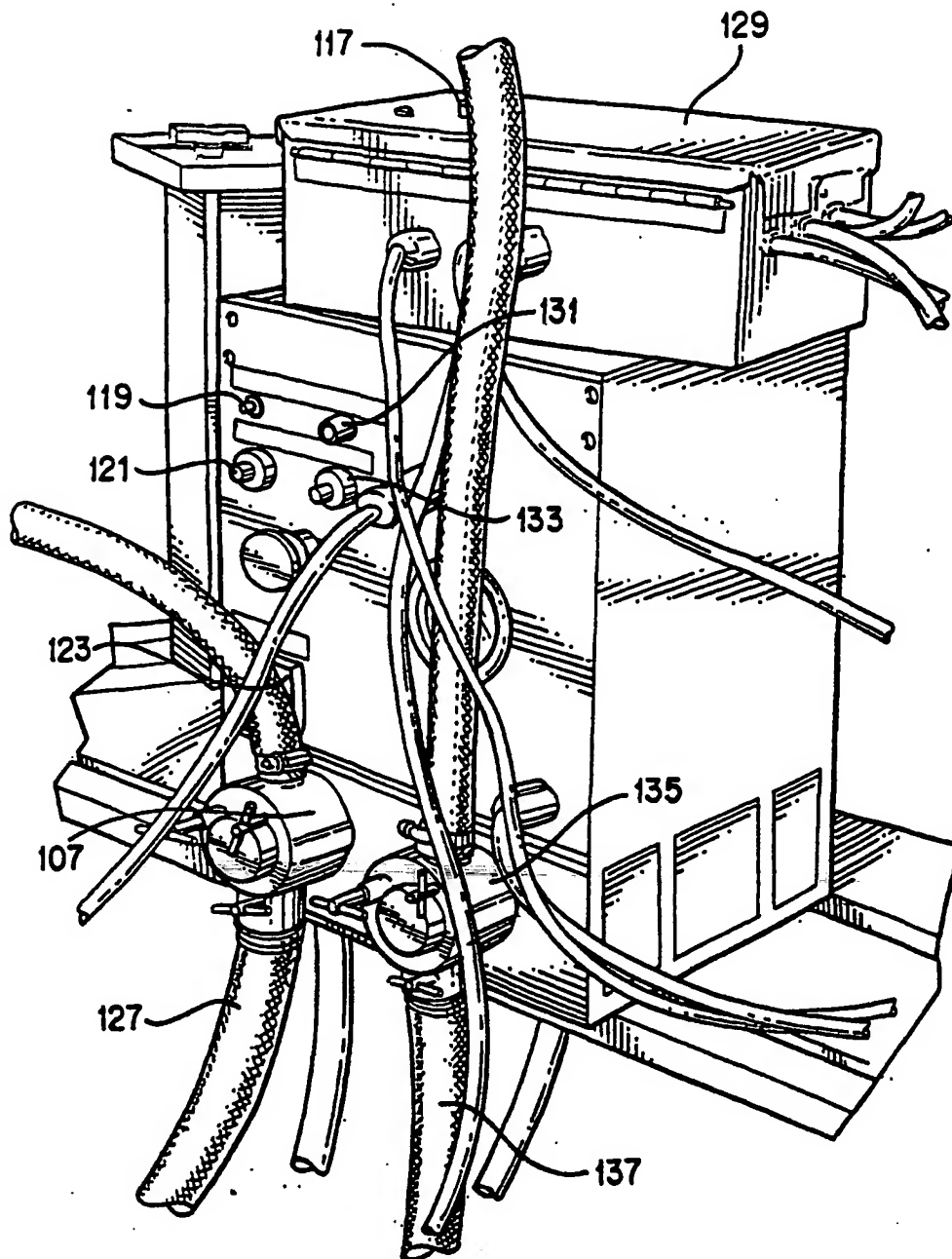


FIG. 2

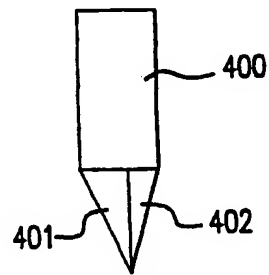
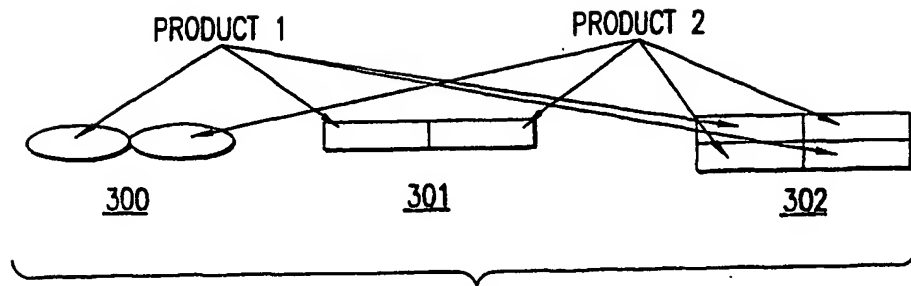


FIG. 4



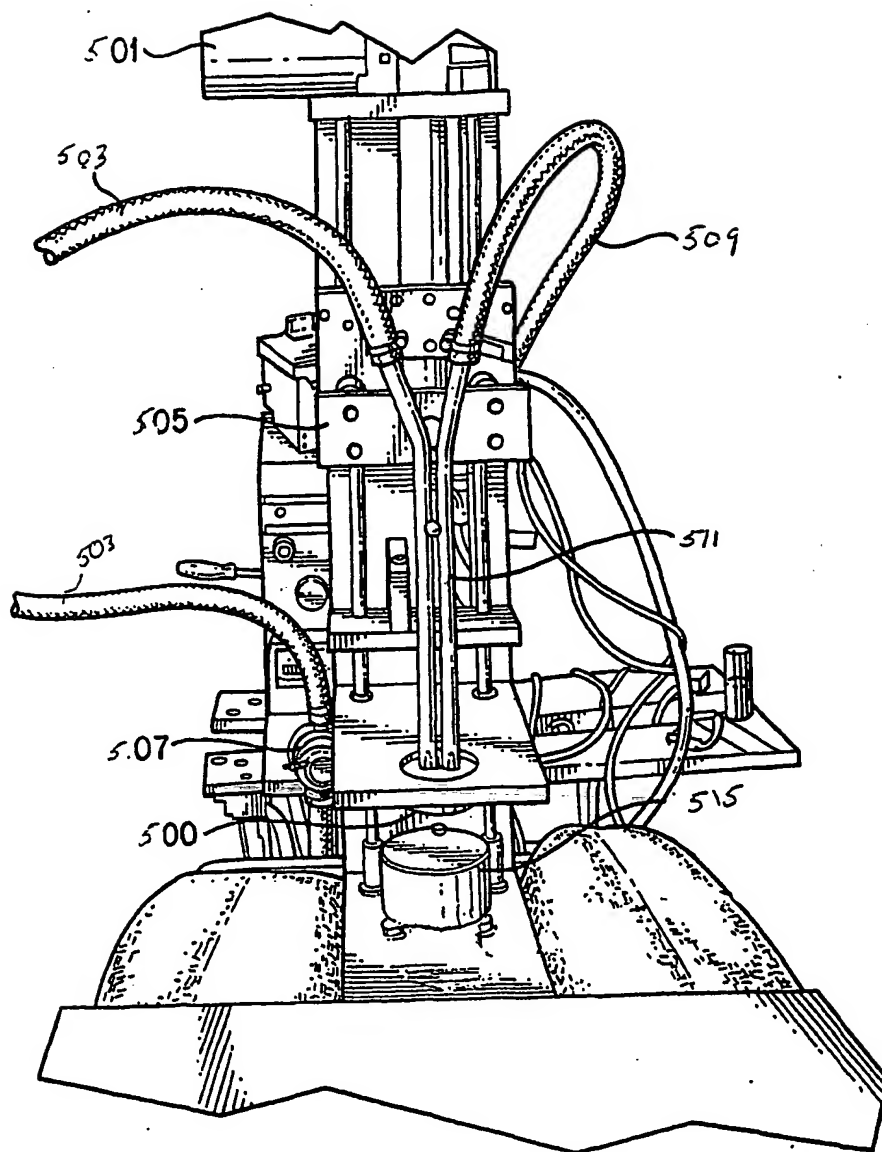


FIG. 5

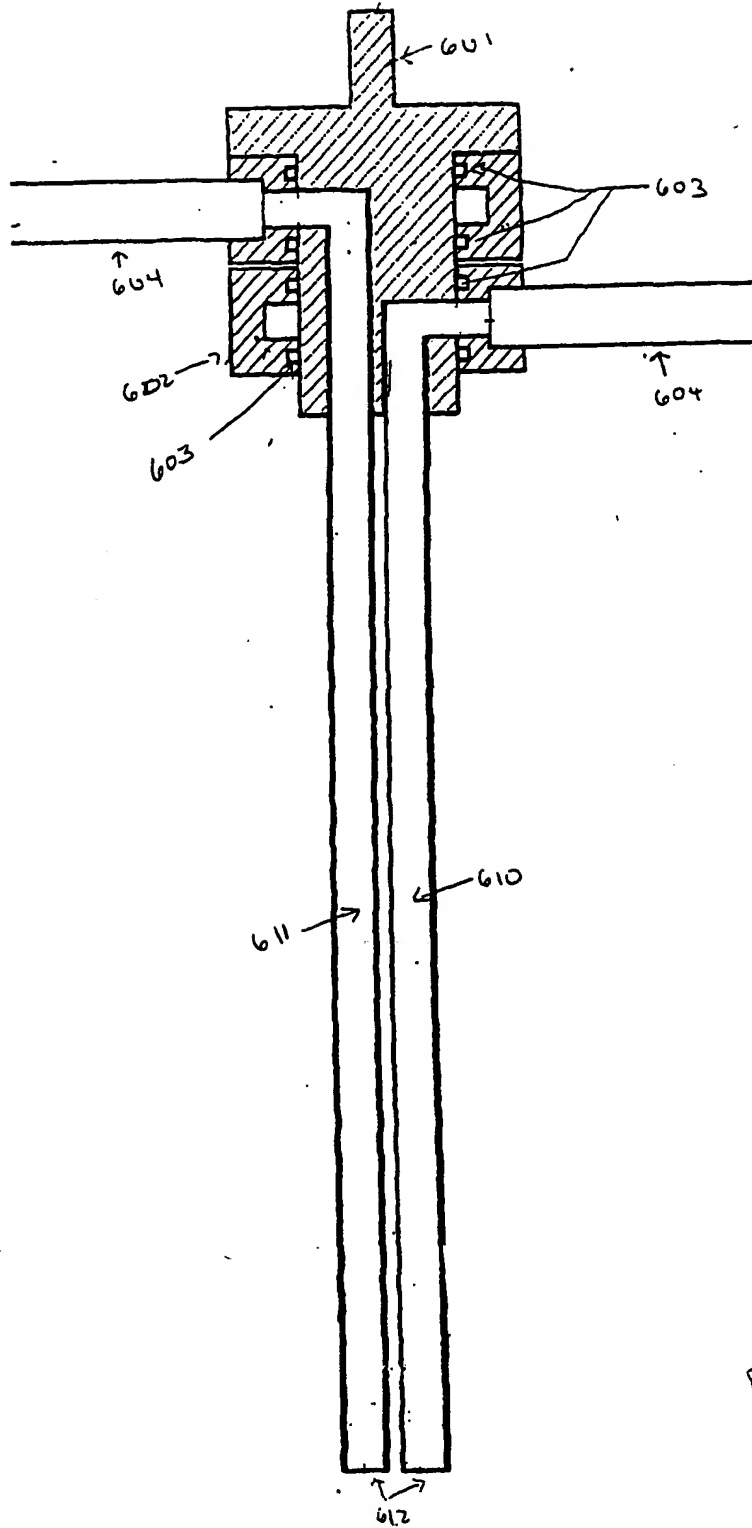


Fig. 6.

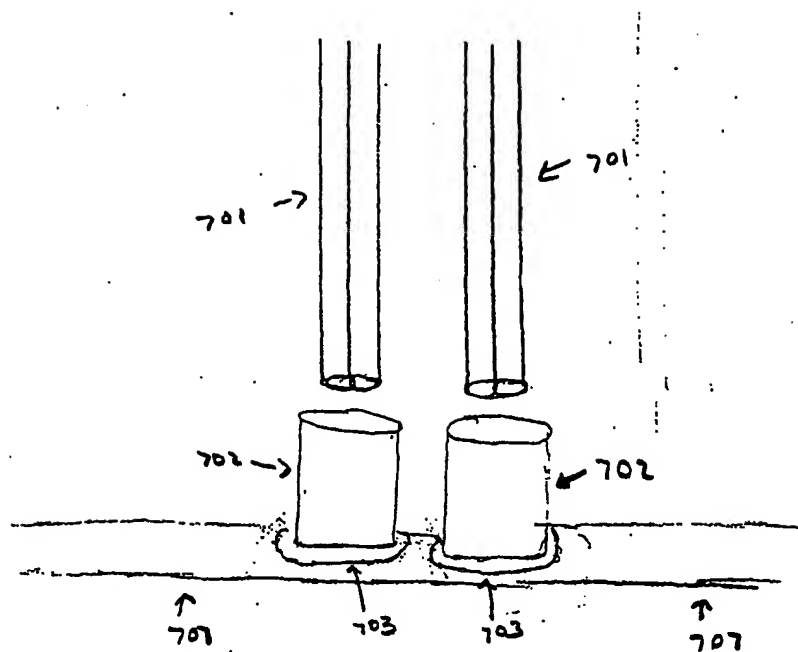


Figure 7

## INTERNATIONAL SEARCH REPORT

In Application No  
PCT/US 01/18705

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K7/00 B65B3/04 B65B39/12 B67C3/26 A45D40/24  
A45D40/16

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K B65B B67C A45D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 5 059 414 A (DALLAL JOSEPH A ET AL) 22 October 1991 (1991-10-22) Whole document, in particular column 5, line 58-line 67; column 6, line 3-line 6; column 10, line 19-line 23</p> <p style="text-align: center;">— / —</p>	1-18

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

27 March 2002

Date of mailing of the international search report

05/04/2002

Name and mailing address of the ISA

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## INTERNATIONAL SEARCH REPORT

Int'l Application No

PCT/US 01/18705

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 777 379 A (LEWELLEN W) 11 December 1973 (1973-12-11) column 2, line 42 - line 52 column 2, line 63 -column 3, line 9 column 3, line 62 -column 4, line 2 column 4, line 21 -column 5, line 6 column 5, line 12 - line 29 column 6, line 35 - line 42 claims 1,3,4,6,10,11	8,12-16
Y	---	1-7, 9-11,17, 18
Y	WO 01 01931 A (HEHNER URSULA ;KOSCHIK ACHIM (DE); QUENZER ALMUT (DE); WELLA AG (D) 11 January 2001 (2001-01-11) page 5, line 13 - line 20 page 6, line 3 page 6, last paragraph page 13, line 22 page 14, line 22 - line 26 page 12, paragraph 1 page 15, line 9 - line 16 page 16, line 5 claims	1-7, 9-11,17, 18
X	---	8,12-16
X	US 6 213 166 B1 (LONG DANIEL ET AL) 10 April 2001 (2001-04-10) the whole document	19-28
X	---	8,12-17
X	US 4 980 155 A (SHAH ARVIND N ET AL) 25 December 1990 (1990-12-25) cited in the application the whole document	8,12-17
X	---	8,12-17
X	US 4 966 205 A (TANAKA YOSHINORI) 30 October 1990 (1990-10-30) cited in the application column 3, line 55 -column 4, line 23 claims	8,12-16
Y	---	1-18
Y	WO 98 24399 A (BORDAT PASCAL ;HEIDE BARBARA (DE); HENKEL KGAA (DE)) 11 June 1998 (1998-06-11) abstract page 2, paragraph 4 page 4, line 7 - line 18 page 5, paragraph 4 claims	
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## INTERNATIONAL SEARCH REPORT

Int'l Application No  
PCT/US 01/18705

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 567 426 A (SEBILLOTTE LAURENCE ET AL) 22 October 1996 (1996-10-22) abstract; claims column 2, line 9 - line 23 column 6, line 28 - line 38 column 10, line 50 - line 58 -----	1-18

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-28

1.Claims 1-18 Composition having two dispersed phases..

1.1. Claims: 19-28

A method for forming a spiral, for filling a container.. and and apparatus for

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-7,9-11 18

Present claims 1-7,9-11 and 18 relate to compositions defined by reference to a desirable characteristic or property, namely ..... "the phase separation boundary between the two phases promotes product stability by limiting the ability of the phase to mix with one another so that the transparent container having the swirled composition has a stable shelf life."

The claims cover all compositions having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such compositions. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compositions by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to the examples on pages 29 and 30 and compositions as defined in claim 1 excluding the desiderated properties

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.



INTERNATIONAL SEARCH REPORT  
Information on patent family members

In International Application No  
PCT/US 01/18705

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5059414	A	22-10-1991	NONE	
US 3777379	A	11-12-1973	AU 6325573 A	05-06-1975
WO 0101931	A	11-01-2001	DE 19930438 A1	09-12-1999
			AU 5979100 A	22-01-2001
			DE 29916405 U1	09-12-1999
			WO 0101931 A2	11-01-2001
			EP 1143922 A2	17-10-2001
US 6213166	B1	10-04-2001	US 2001035230 A1	01-11-2001
US 4980155	A	25-12-1990	NONE	
US 4966205	A	30-10-1990	FR 2626503 A1	04-08-1989
			JP 1301611 A	05-12-1989
			JP 2836744 B2	14-12-1998
US 4335103	A	15-06-1982	NONE	
WO 9824399	A	11-06-1998	DE 19650952 A1	10-06-1998
			CA 2246316 A1	11-06-1998
			CN 1214627 A	21-04-1999
			CZ 9802847 A3	17-02-1999
			WO 9824399 A2	11-06-1998
			EP 0907345 A2	14-04-1999
			HU 0000405 A2	28-08-2000
			NO 983618 A	02-10-1998
			PL 328517 A1	01-02-1999
			SK 120698 A3	11-01-1999
US 5567426	A	22-10-1996	FR 2693466 A1	14-01-1994
			CA 2139853 A1	20-01-1994
			DE 69301918 D1	25-04-1996
			DE 69301918 T2	08-08-1996
			EP 0648102 A1	19-04-1995
			ES 2085788 T3	01-06-1996
			WO 9401073 A1	20-01-1994
			JP 8501488 T	20-02-1996

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